HEALTHY LIFESTYLE CHOICES AND UCHEE PINES INSTITUTE

LIFESTYLE INTERVENTION WITH NATURAL REMEDY THERAPIES CONFERENCE

UCHEEPINES.ORG

Healthy Lifestyle Choices

Uchee Pines

Improving Health One Choice at a Time

- Diabetes is a chronic disorder of carbohydrate, fat, and protein metabolism characterized by fasting elevations of blood glucose levels and a greatly increased risk of cardiovascular disease, renal disease, and neuropathy.

Diabetes and Insulin Resistance

More than 100 million U.S. Adults are now living with diabetes or prediabetes.

2015, 30.3 million americans – 9.4 percent of the U.S. Population –have diabetes. Another 84.1 million have prediabetes, a condition that if not treated often leads to type 2 diabetes within five years.

Nearly 1 in 4 four adults living with diabetes

The number of people diagnosed with DM globally has more than quadrupled in the past 35 years from 100 millions in 1980 to 422 million in 2014

- Life expectancy shortened by 5-10 years or more
- Contributes to 160,000 deaths a year
- 2-4 times risk for stroke
- Over 50,000 diabetics on dialysis or have transplant yearly
- Increased risk of breast and uterine cancers

Diabetes Complications

- Cardiovascular disease
- Hypertension
- Retinopathy
- Renal disease
- Neuropathy
- Amputations:
- Periodontal disease
- Pain
- Depression
- Autoimmune

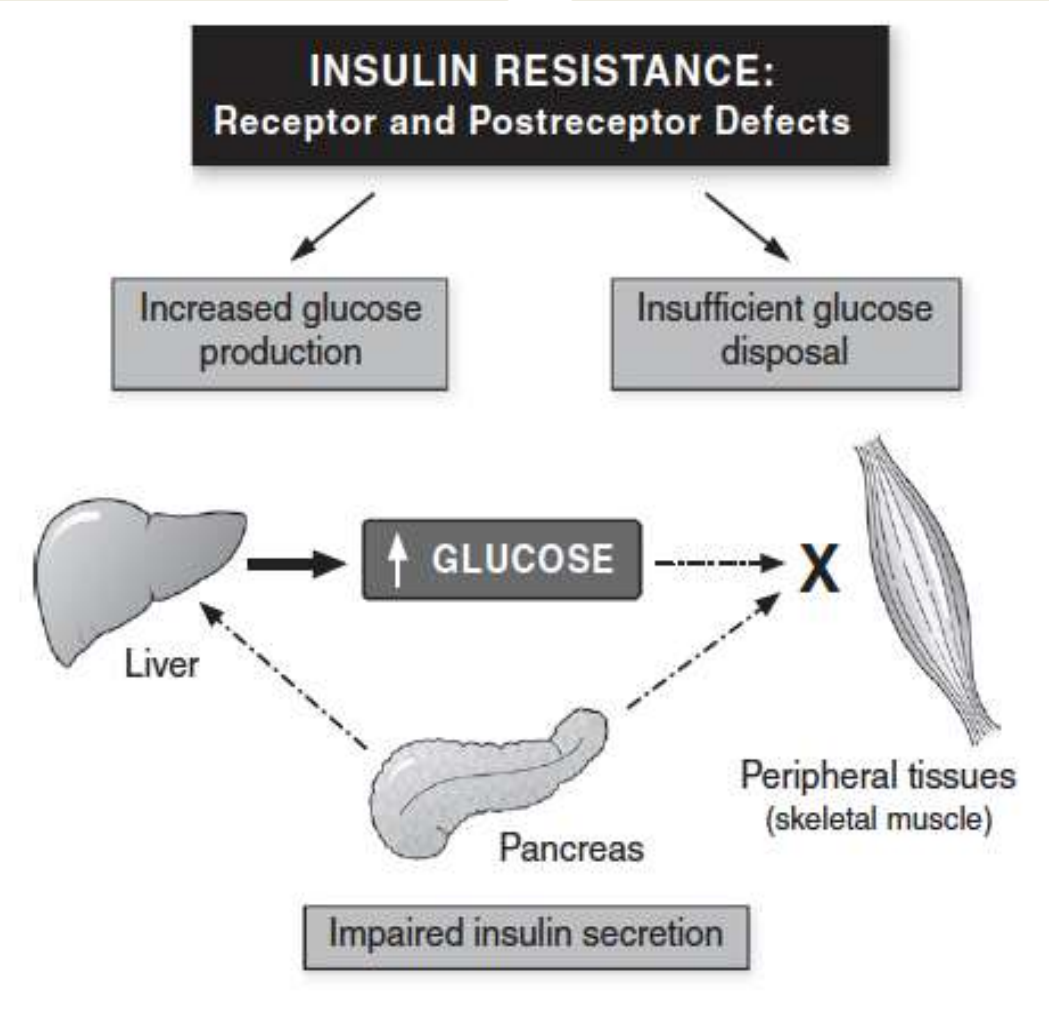
Insulin resistance facts

IR IS DEFINED AS A DECREASED CELLULAR SENSITIVITY TO INSULIN AND VARIES BY THE CELL TYPE, THE ORGAN, AND THE PARTICULAR METABOLIC PATHWAY.

IR IS ASSOCIATED WITH AN INFLAMMATORY STATE AND THAT SUCH ACTIVATION OF INFLAMMATORY PATHWAYS SUSTAINS IR AND ULTIMATELY LEADS TO THE DEVELOPMENT OF METABOLIC SYNDROME.

What cause IR?

- Insulin resistance results from inherited and acquired influences. Hereditary causes include mutations of insulin receptor, glucose transporter, and signaling proteins.
- Acquired causes include physical inactivity, diet, medications, hyperglycemia (glucose toxicity), increased free fatty acids, and the aging process.
  - **Obesity, the most common cause of insulin resistance, is associated mainly with postreceptor abnormality but is also associated with a decreased number of insulin receptors.**


INSULIN RESISTANCE:
Receptor and Postreceptor Defects
Increased glucose production
Insufficient glucose disposal
GLUCOSE
X
Liver
Pancreas
Peripheral tissues
(skeletal muscle)
Impaired insulin secretion

- Scientists have discovered that abnormalities in fatty acid metabolism cause inappropriate buildup of fat in muscle tissue, the liver, and other organs.

- **Lipotoxicity, with an amplified plasma free fatty acid concentration, is a hallmark of IR**. Subsequently, these lipids are associated not only with an abnormal accumulation, but also with increased fat oxidation with further damage to the cell.

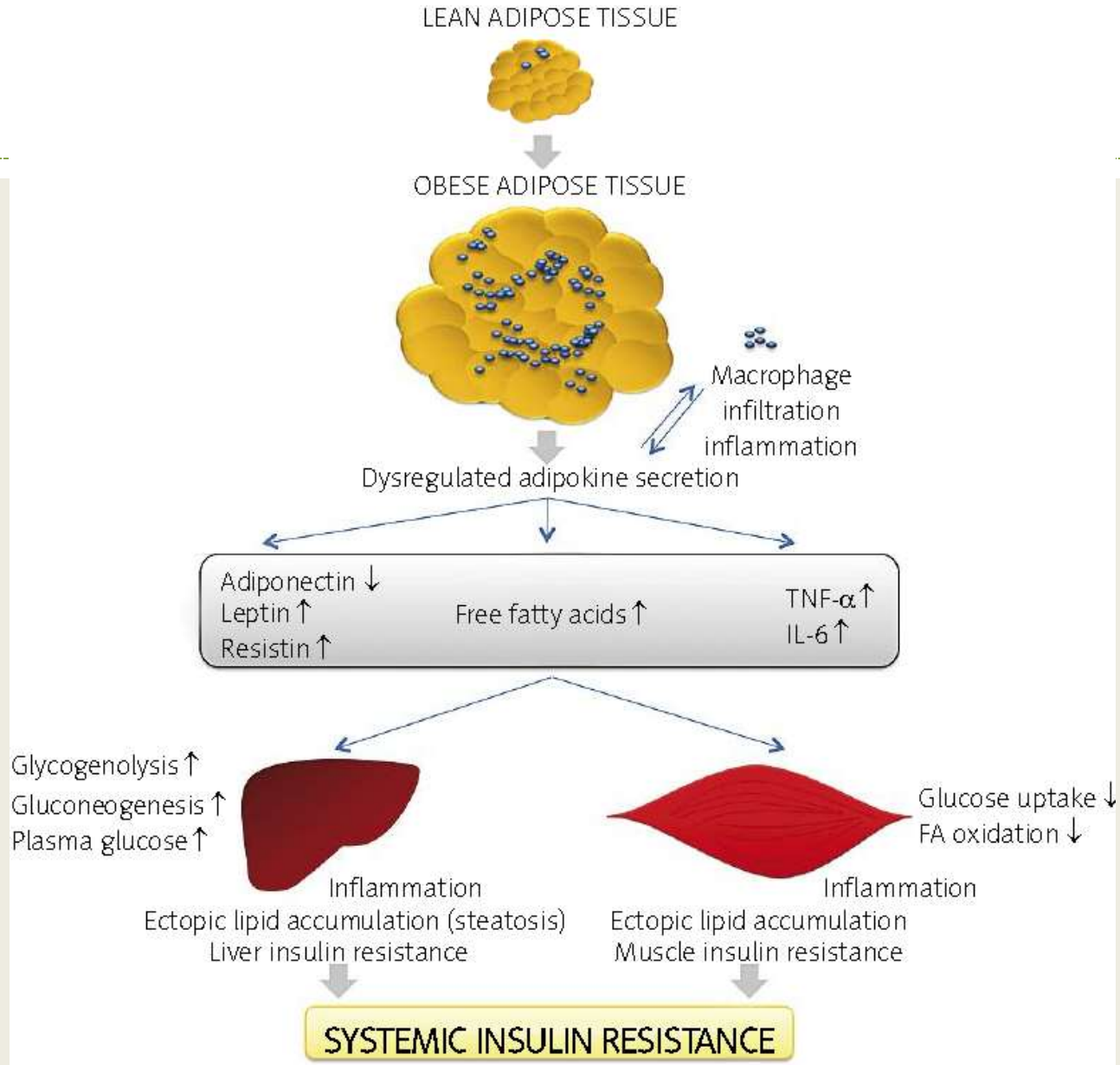

LEAN ADIPOSE TISSUE
OBESE ADIPOSE TISSUE
Macrophage
infiltration
inflammation
Dysregulated adipokine secretion
Adiponectin ↓
Leptin ↑
Resistin ↑
Free fatty acids ↑
TNF-α ↑
IL-6 ↑
Glycogenolysis ↑
Gluconeogenesis ↑
Plasma glucose ↑
Inflammation
Ectopic lipid accumulation (steatosis)
Liver insulin resistance
Glucose uptake ↓
FA oxidation ↓
Inflammation
Ectopic lipid accumulation
Muscle insulin resistance
SYSTEMIC INSULIN RESISTANCE

TABLE 31-2. Abnormalities Associated With Insulin Resistance[7,8]

Some Degree of Glucose Intolerance

- Impaired fasting glucose
- Impaired glucose tolerance

Abnormal Uric Acid Metabolism

- ↑ Plasma uric acid concentration
- ↓ Renal uric acid clearance

Dyslipidemia

- ↑ Triglycerides
- ↓ High-density lipoprotein cholesterol
- ↓ Low-density lipoprotein particle diameter
- ↑ Postprandial lipemia

Hemodynamic Changes

- ↑ Sympathetic nervous system activity
- ↑ Renal sodium retention
- ↑ Blood pressure (50% of patients with hypertension have insulin resistance)

Hemostatic Changes

- ↑ Plasminogen activator inhibitor-1
- ↑ Fibrinogen

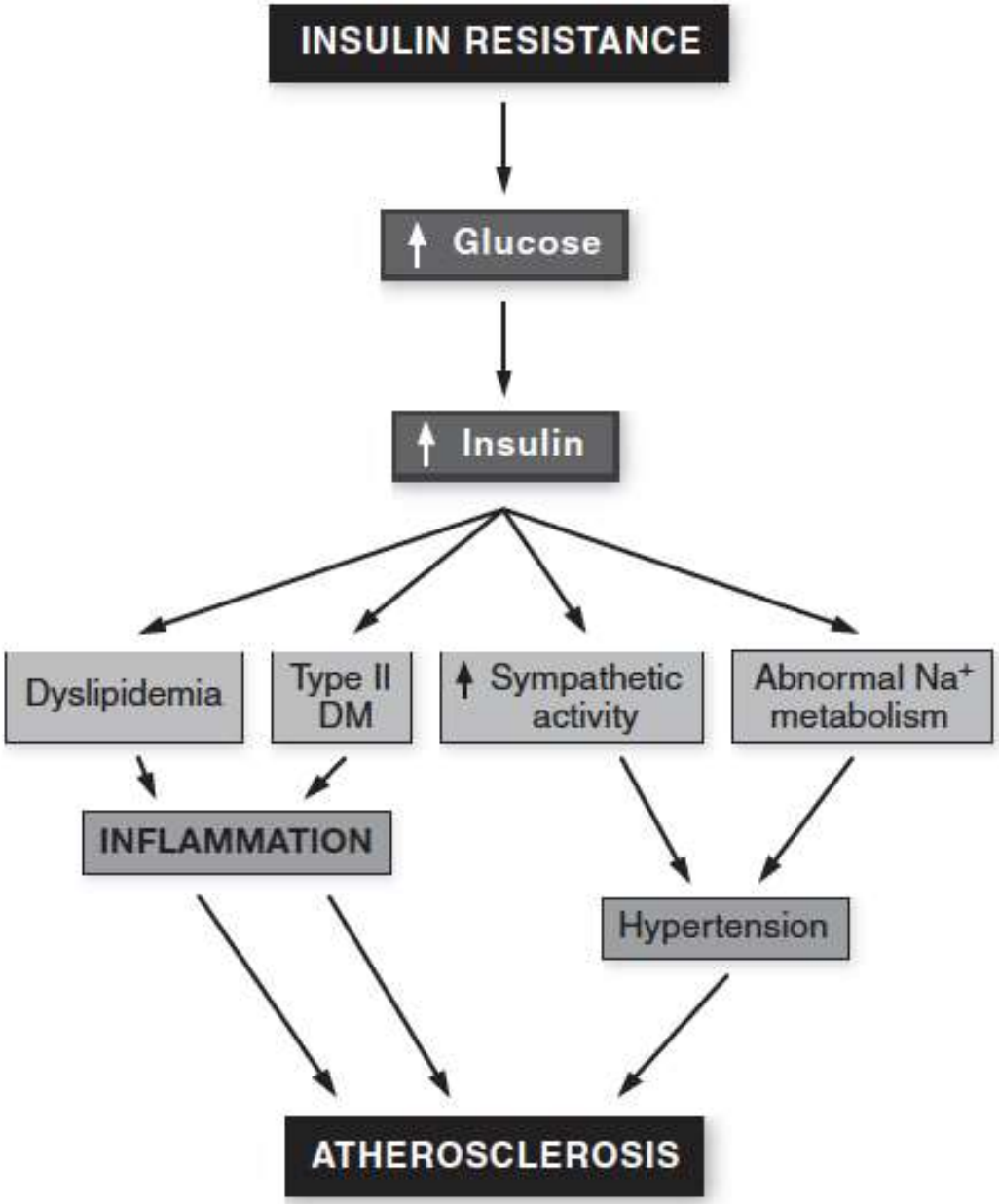
Endothelial Dysfunction

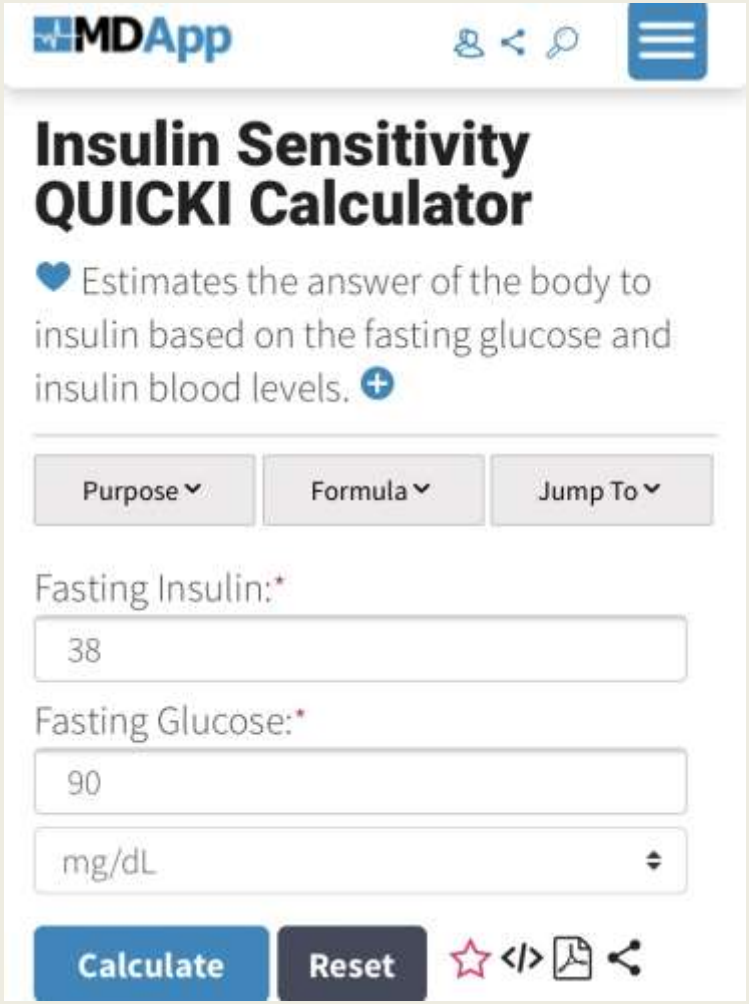
- ↑ Mononuclear cell adhesion
- ↑ Plasma concentration of cellular adhesion molecules
- ↑ Plasma concentration of asymmetric dimethyl arginine
- ↓ Endothelial-dependent vasodilatation

Reproductive Disorders

- Polycystic ovarian syndrome
- Low testosterone in men

Data from Corona G, Monami M, Rastrelli G, et al. Testosterone and metabolic syndrome: a meta-analysis study. *J Sex Med.* 2011;8:272–283; and Reaven G. Metabolic syndrome: pathophysiology and implications for management of cardiovascular disease. *Circulation.* 2002;106:286–288.


INSULIN RESISTANCE
↑ Glucose
↑ Insulin
Dyslipidemia
Type II DM
↑ Sympathetic activity
Abnormal Na+ metabolism
INFLAMMATION
Hypertension
ATHEROSCLEROSIS



Quantitative Insulin Sensitivity Check Index (QUICKI) = 0.28

Interpretation: QUICKI values range between 0.45 in healthy individuals (noted as unusually healthy in the original study) and 0.30 in diabetics. Lower values reflect greater resistance with values below 0.339 indicating insulin resistance.

- Factors implicated in contributing to prediabetes, insulin resistance, and the progression to T2DM include a diet high in refined carbohydrates, particularly high fructose corn syrup; an elevated intake of saturated fats; overeating due to increased portion sizes of food; increases in inflammatory markers; lack of exercise; industrial pollution; abdominal weight gain; hormonal imbalances inadequate sleep; and nutritional deficiencies.

Diabetes Monitoring

- Annual HbA(1c)
- Annual waist-hip ratio
  - male 1; female 0.8
- 2 x yearly blood fats
- 2 x yearly eye exam
- 4 x yearly BP test
- Daily foot exam with mirror by patient

Testing for Diabetes

1. **Testing for diabetes should be considered in all individuals at age 45 years and above, and, if normal, it should be repeated at three-year intervals.**

- **2. Testing should be considered at a younger age or be carried out more frequently in individuals who:**
  - Are obese
  - Have a first-degree relative with diabetes
  - Are members of high-risk ethnic populations (e.g., African-American, Hispanic, Native American)
  - have delivered a baby weighing >9 lb or have been diagnosed with GDM
  - Are hypertensive (>130/85)
  - Have an HDL cholesterol level <35 mg/dl and/or a triglyceride level >150 mg/dl
  - On previous testing, had IGT or IFG

Sugar Diabetes

(Diabetes Mellitus)

honey-sweet urine

1. Type 1
2. Type 1.5
3. Type 2
4. Type 3 (Alzheimer's Disease)

Type I Diabetes

T1DM is an autoimmune disease caused by destruction of the beta cells of the pancreas, which manufacture insulin. Positive antibodies against beta cells or insulin occur in 75% of patients with T1DM. Why the immune system is activated to attack the pancreas is not fully clear, but viral infection, food sensitivities, and chemical or free radical damage is likely, combined with genes that may predispose to T1DM.

Type I Diabetes

- Cow's milk in infancy may be major cause
  - *NEJM*. 327:302, 1992; *Diabetologia.* 26:24, 1984
- Coffee use during pregnancy
  - *BMJ.* 300:641, 1990
- Use of coffee or tea in childhood
  - *European Journal of Clinical Nutrition*. 48:279, 1994
- Ingestion of nitrates and nitrites by children or in the prenatal period –*Diabetes Care*. 15:1505, 1992; *Diabetes Med*. 11:656, 1994

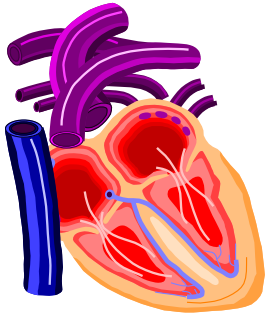
Results of Blood Sugar Control for Type I Diabetics

76% reduction in diabetic retinopathy

54% reduction in significant kidney disease

60% reduction in peripheral neuropathy

35% decrease in cardiovascular risk

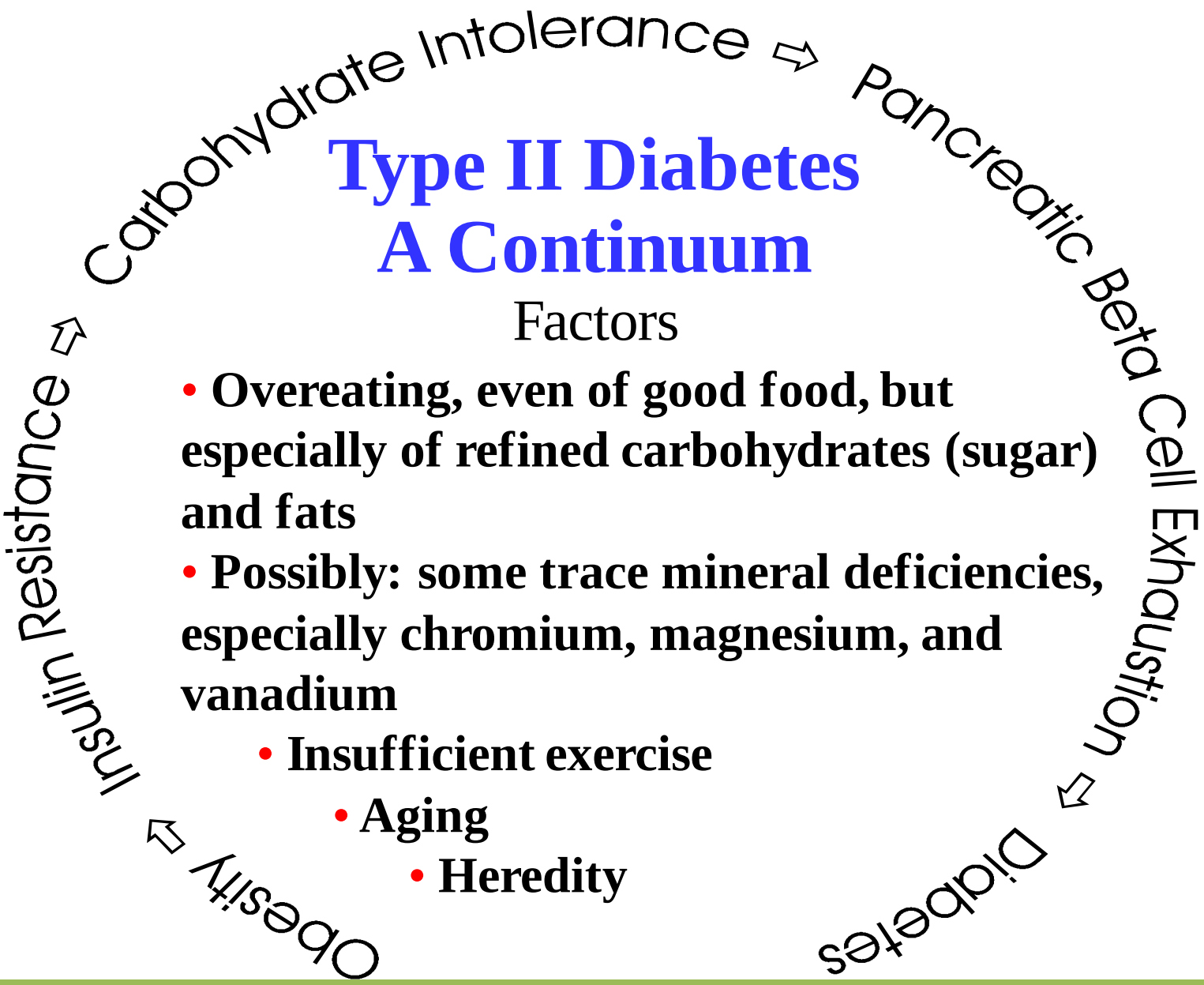


LADA

Damage to the pancreas, drug induced, a viral infection and or Vitamin D deficiency along with other lifestyle factors.

Latent Autoimmune Diabetes in Adults (LADA) is a form of autoimmune (type 1 diabetes) Alternate terms that have been used for "LADA" include Late-onset Autoimmune Diabetes of Adulthood

"Slow Onset Type 1" diabetes, and sometimes also "Type 1.5" diabetes.



Type II Diabetes
A Continuum

Factors

- **Overeating, even of good food, but especially of refined carbohydrates (sugar) and fats**
- **Possibly: some trace mineral deficiencies, especially chromium, magnesium, and vanadium**
- **Insufficient exercise**
- **Aging**
- **Heredity**

Chromium & Magnesium - 1

- Organically bound to brewer's yeast is best absorbed
- Called "Glucose Tolerance Factor" because it helped restore normal carbohydrate tolerance in early diabetic animals.

Deficiencies

- Highly refined carbohydrate foods (white flour, white rice, sugar products) are low in chromium and cause rapid loss of it from body tissues.
- Fats interfere with absorption
- Excess zinc, calcium, iron, manganese interfere with absorption and utilization
- Stress, such as malnutrition and blood loss

Magnesium

- One of the most prevalent minerals in the body
  - Absorption is interfered with by:
    - High intake of calcium
    - Phosphate, oxalic acid (spinach, rhubarb), poorly digested fats
- RDA: Adult men: 350 mg; Adult women: 280mg
- Processing grains causes loss of most Mg
- Refined sugar, alcohol, fats, oils=0
  - Excessive cooking in a lot of water causes losses
- Rich sources: peanut flour, sesame seeds, soy flour, wheat bran, wheat germ
- Good sources: Blackstrap molasses, nuts, peanut butter, whole grains, whole wheat flour, yeast
- Fair sources: Avocados, bananas, breads, beef, cornmeal, dried fruits, fish, olives, most leafy vegetables

Chromium & Magnesium - 2

Good Dietary Sources

- **Blackstrap molasses, apple peels, banana, corn products, potatoes, whole wheat, wheat bran (cheese, egg, liver ☹)**
- **Fair sources: Carrots, green beans, oranges, spinach, strawberries**
- **Recent Report: High doses of Chromium Polynicotinate (1000 mcgm/day) can reverse mild to moderate Type II Diabetes in 6-8 months.**
- **Report July 1997 from Johns Hopkins: *Low serum magnesium may be a strong independent predictor of Type II Diabetes.***

Type II - Early Signs

- Higher fasting glucose levels
  - *Postgraduate Medicine*. 101:87, 1997

- Norwegian study of 2,000 men for 22 years. If FBS is greater than 85, more likely to get cancer, diabetes, hypertension, high blood fats
  - *Diabetes Care*. 22:45, 1999

Type II Diabetes - Causes

- Hereditary predisposition
- Overweight – central
- Hepatitis B immunization in infancy doubles the risk of diabetes
  - *Diabetes.* 20:509, 1997
- Gestational diabetes
- High fat diet
- Diet low in fiber
  - *JAMA.* 277:472, 1997

Treatment – Type II

- Weight control
- Regularity of schedule
- Exercise
- Fasting 3-5 days
- Vegan, high fiber diet
  - *Journal of Geriatrics Soc*. 46:143, 1998
- Lemon juice may reduce blood sugar
  - *NEJM*. 310:171, 1984
- Gluten-free diet
  - *Diabetes, Research & Reviews*. 15:223, 1999

Treatment – Type II

- Barley better than wheat diet
  - *Annals Nutr. & Met.* 35:61, 1991
- Barley high in chromium, rich in fiber
  - 15-31% vs < 10% in wheat
  - *J. Am. Diatetic Assoc.* 94:1259, 1994

Treatment – Type II

No safe snack foods; no vacation from diet

Treatment – Type II

- Fresh onions, garlic.
- Omega-3 & 6 PUFAs
  - ***Diabetic Medicine.*** **11:520, 1994**
  - ***Int.Med. News.*** **12-1-80:5**
  - ***Cardiology News*****. 6-1-94:32**
  - ***J. Nutr*****. 126:1549, 1996**

Omega-3 Foods

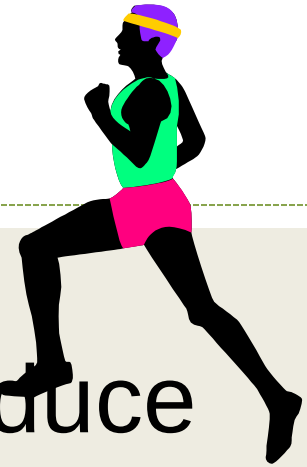
Flaxseed oil	1 tablespoon	7520 mg
English walnuts	¼ cup	2043
Canola oil	1 tablespoon	1267
Black walnuts	¼ cup	1031
Wheat germ oil	1 tablespoon	938
Soybean oil	1 tablespoon	927
Green soybeans	1 cup	637
Spinach, canned	1 cup	353

Depression, The Way Out. Neil Nedley M.D., p.73

Fasting

- **Short-term, 3-5 days**
- **Medical supervision**
- **Stop all medications, drink only water or herb teas**
- **Check blood glucose 3 times a day**
- **Stop fast when glucose falls to normal, or if glucose rises instead of falling**

Exercise



- Numerous studies show that exercise can both prevent and reduce Type II diabetes.
- German study in 1996: “Increased physical activity delays the onset of non-insulin dependent diabetes or even prevents the disease in about 50% of susceptible individuals…”

Exercise

From Medical College of SC, 1998: "In a study of about 1,500 men and women, researchers found that people who exercised-even moderately-made more efficient use of insulin to metabolize food." (Previous studies had shown vigorous exercise was beneficial, but this study showed that even a 30 minute stroll daily significantly reduced the risk of diabetes).

Herbs

- Gotu cola
- Ginseng
- Bilberry & blueberry leaf
- Fenugreek seeds
- Gymnema sylvester
- Coleus forskohlii
- Ginkgo bilboa
- Olive, fruit & leaves

Herbal References

- *Planta Medica.* 42:205
- *J. Ethnopharmacology.* 30:295
- *Indian J. of Physiology & Pharm.* 33:97
- *Diabetologia* 36. (Suppl. 1), A119, August, 1993
- *Am. J. Natural Med*. 3:28, 1996
- *Diabetic Med*. 13:522, 1996
- *Nutr. Research.* 16:1331, 1996
- *Phytotherapy Research.* 10:82, 1996
- *Diab. Res. Clin. Pract.* 39:19, 1998
- *J. Alternative & Complimentary Med.* 5:273, 1999
- *J. Am. Col. Nutr.* 14(4):387, 1995.

Overweight

- 61% of Americans are overweight or obese
- 80% of overweight or obese subjects develop Type II diabetes

Appetite Chain Reaction

Appetite stimulus

Ghrelin production (stomach hormone)

Food intake

Appetite dies, ghrelin stops

Appetite Chain Reaction

Sugars in diet (not fructose)

↘

Insulin production

↘

Fat cells produce leptin

↘

Signal to brain, “Stop eating.”

Appetite Chain Reaction

Fatty meals

Insulin resistance in cells

Gums up hormone signals

No message received from leptin

Appetite Chain Reaction

Fructose drinks

Insulin

Leptin

Message to brain

Summary – Appetite Chain

The more fat and fructose in your diet, the less control of food intake.

Fructose grams

- 12 oz. soda….25 gm.
- One banana…..7 gm.
- One peach…….4 gm.
- One apple……12 gm.

Summary – Appetite Chain

Fat and fructose in the diet make:

- The appetite strong
- The ghrelin levels stay high
- Insulin resistance develop
- Leptin production nil

Fructose

- When blood levels of fructose are high, triglycerides levels go up – as do risks for heart disease and hypertension.

Eight Cancers Linked to Sugar Consumption

- Colon cancer
- Rectal cancer
- Breast cancer
- Ovarian cancer
- Uterine cancer
- Prostate cancer
- Kidney cancer
- Cancers of the nervous system

Treatment – Type II

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  - *NEJM*. 310:171, 1984
- Gluten-free diet
  - *Diabetes, Research & Reviews*. 15:223, 1999

Case "X"

- 57 y/o
- DMII, Obesity, Hyperlipidemia.
- 12 years with insulin
- 60 Units
- Janumet (sitagliptin and metformin 50/1000) 2x day.

- FBG 173 mg/dl
- HGB A1C 12.0%
- TG 158 mg/dl
- Chol T. 192 mg/dl
- HDL 36 mg/dl
- LDL 124 mg/dl
- Chol/HDL ratio 5.33
- Insulin 4.48 IU/ml
- C-Peptide 1.3 ng/ml (1.1-4.8)
- Vit. D 12.8 ng/dl

After 34 days.

- Fasting 72hrs/ once a week.
- Greens diet
- Exercise/Walking
- Sunbathing
- Stress management
- Spiritual counseling

- FBG 101 mg/dl
- HGB A1C 9.7%
- TG 80 mg/dl
- Chol T. 164 mg/dl
- HDL 47 mg/dl
- LDL 101 mg/dl
- Chol/HDL ratio 3.49
- Insulin 2.00 IU/ml
- C-Peptide 1.3 ng/ml (1.1-4.8)
- CRP < 1
- Vit D 29.4 ng/ml

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